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Human Resources Research Office
Interim Bibliography of Publications

1 July to 31 December 1965

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February 1966
The George Washington University
HUMAN RESOURCES RESEARCH OFFICE
operating under contract with
THE DEPARTMENT OF THE ARMY

The Human Resources Research Office is a nongovernmental agency of The George Washington University, operating under contract with the Department of the Army (DA 44-188-ARO-2). HumRRO's mission is to conduct studies and research in the fields of training, motivation, and leadership.

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INTERIM BIBLIOGRAPHY

The *Interim Bibliography* has been compiled to provide information about recent publications (1 July to 31 December 1965) of the Human Resources Research Office. It is supplemental to the *HumRRO Bibliography of Publications, As of 30 June 1965* and will be integrated with the annual cumulative listing as of 30 June 1966.

Publications in the *Interim Bibliography* are listed chronologically under the alphabetized Task code words if they relate to a specific effort; Exploratory Studies and Basic Research Studies are arranged by number. Items in the general section are grouped in chronological order according to whether they are HumRRO publications or professional presentations and publications. The final section lists research by-products. The Defense Documentation Center's accessions (AD) numbers have been added to the end of appropriate citations.

TASKS

AREA—Division No. 7 (Language and Area Training) (Ongoing Task) Subtask Development of Concepts and Techniques for Area Training

"Simulation Exercises in Area Training," by Edward C. Stewart, paper read at annual Army Human Factors Research and Development Conference, Fort Bragg, N.C., October 1965; in conference proceedings, *Report of the Eleventh Annual Army Human Factors Research and Development Conference*, October 1965.

Special techniques and content are being developed to supplement current area training programs. Simulation was chosen as the technique, and exercises were developed whose content emphasized the American culture and the foreign, host culture. These evolved as a confrontation between American cultural assumptions and values and a contrasting set, conceived for training and research purposes only, called contrast-American assumptions and values. When accompanied by appropriate introduction and critique, these exercises hold promise of achieving their training objectives.

CIVIC—Division No. 7 (Language and Area Training) (Ongoing Task) Guidelines for Civic Action Advisors

"Peasant Fatalism and Socioeconomic Innovation," by Arthur Niehoff, paper read at II meeting of American Anthropological Association, Denver, November 1965.

CONTACT—Division No. 7 (Language and Area Training)¹

Subtask

Development of Training Procedures for Faster Acquisition of Perishable Tactical Information From Non-English-Speaking Prisoners of War

**A Self-Instructional Tactical Language Course in Russian, Technical Report 65-14, II
Eugene H. Rocklyn, December 1965. AD-626 262**

To enable the combat soldier to obtain perishable, tactical information from newly captured prisoners of war, a brief, self-instructional Russian language course was developed and evaluated. Materials obtained from questionnaires administered to combat-experienced personnel were reviewed and refined, resulting in a final version of course content that covered areas of information likely to be used in any offensive or defensive questioning situation. The course was taken by 13 students having language aptitudes ranging from 0 to the 97th percentile on the Army Language Aptitude Test. Upon completion, they were tested on content acquisition of all material in the course and on ability to use the material to obtain information from native Russians during simulated combat-area questioning. The results were a mean of 93% correct for speaking and understanding Russian and an 89% mean in translating answers given by the Russians, thus demonstrating the feasibility of such a course. The structure and questioning techniques seem effective in helping to elicit understandable answers from non-English-speaking personnel and may serve as a basis for development of similar courses in other languages.

Development and Evaluation of a Tactical Mandarin Chinese Language Course, Technical Report 65-15, by Catherine Garvey and Eugene H. Rocklyn, December 1965. AD-629 444 III

To meet the need for a short, self-instructional tactical language course in a Far Eastern tonal type language of potential military significance, a course in Mandarin Chinese was developed, by adapting the methods described in Subtask CONTACT II with reference to a European type language (Russian). The purpose of the course was to enable combat soldiers to acquire perishable tactical information from newly captured POWs. The course was programed in the format of the Russian model with a major change in the addition of tone-discrimination and tone-production lessons. Six male students, high school seniors and graduates with varied language-learning aptitudes, took the course and completed it in 61 to 84 hours. Their final test scores, indicating ability to speak and understand all the assigned Chinese vocabulary, ranged from 55% to 98% correct. In a simulated questioning test, the mean percentage of correctly translated answers was 86%. Although low language-learning aptitude was associated with lower scores, the overall achievement appeared to be satisfactory.

¹This Task was initiated at Division No. 1 (System Operations).

Synthetic Flight Training Programs and Devices

"Reduction of Helicopter Pilot Attrition Through Synthetic Contact Flight Training," by II Paul W. Caro, Jr., paper read at meeting of APA, 1965.

The reduction of flight attrition in primary helicopter training through the use of a synthetic contact flight training device is described. The device, a one-man helicopter mounted on a ground effects machine through an articulated linkage which allows freedom of movement in six dimensions, preserves the handling characteristics and visual, auditory, and proprioceptive cues of the in-flight task. Two experimental groups received 3 1/4 or 7 1/4 hours device training, and their attrition rates during subsequent flight training were compared to that of controls. The synthetic training groups experienced lower attrition ($p < .01$) than the controls. No significant difference existed between experimental groups.

FIGHTER—Division No. 3 (Recruit Training)**Factors Related to Effectiveness and Ineffectiveness of Individuals in Combat**

"The Trumpet Sounds: Can Our Troops Be 'Battleproofed'," *Army Information Dig.*, vol. 20, no. 12, December 1965; based on a briefing by Richard Kern and Howard McFann given at the U.S. Army Infantry School, Fort Benning, Ga.

FORECAST—Division No. 1 (System Operations)**Development of a Method of Forecasting Training Demands Imposed by New Electronic Weapon Systems**

"Two Jobs for One in Electronic Maintenance," by Edgar L. Shriver and Robert C. Trexler, paper read at meeting of APA, 1965.

The FORECAST concept is a collection of policies, strategies, methods, techniques, and services integrated in a plan for an improved level of electronics maintenance in the services. It (a) divides the job of electronics maintenance into two parts—planning and execution, (b) provides the details of how to accomplish the break, (c) provides guidance for personnel who engage in the planning, and (d) provides examples of manuals and training programs for the execution phase. In a test on a Navy system the FORECAST students identified 39% of the malfunctioning parts, the conventional students identified 13% of the malfunctioning parts in the time allowed.

LOWENTRY-Division No. 6 (Aviation)

(Ongoing Task) Subtask

Methods for Improving Navigation Training for Low-Level Flight

The Effect of Training on Accuracy of Angle Estimation, Technical Report 65-8, by I
T. Gary Waller and Robert H. Wright, August 1965.

AD-619 958

This study examined the feasibility of using direct perceptual estimation on maps to determine angles of drift, and the effect of training on this ability. Subjects were divided into a control group and two training groups, one of which was trained using angles drawn on plain white cards, and the other using angles drawn on both cards and tactical maps. Both training groups initially estimated the size of angles, ranging from 1° to 18° , with a mean absolute error of 2.57° and a mean algebraic error of -0.20° . After training, absolute error was 1.34° and algebraic error was $+0.43^{\circ}$. A job aid consisting of reference angles of 5° , 10° , and 15° did not significantly affect performance on map items, although on card items, performance of the training groups shifted from underestimation to slight overestimation of angle size.

The Effects of Map Scale on Position Location, Technical Report 65-9, by Ed Moon I
Edmonds and Robert H. Wright, September 1965.

AD-623 396

This study was conducted to determine the relationship between field position location and map scale. Two map scales were used—1:25,000 and 1:250,000. Twelve subjects were required to mark their position on a map at each of 12 terrain positions. The task was then repeated, utilizing the other scale map. The error in position location was approximately 10 times greater with the 1:250,000 scale map than with the 1:25,000 scale map. However, a significant scale-by-position interaction was found. It was concluded that maps of 1:100,000 or 1:125,000 scale would best meet the tactical target area requirements of Army aviators, and that the 1:250,000 scale map, with certain format changes, would provide the information necessary for en route tactical navigation over moderate or long distances.

MALT--Division No. 7 (Language and Area Training)

(Ongoing Task) Subtask

Construction and Evaluation of a Short, Automated Vietnamese Language Course

"Some Psychological Aspects in Foreign Language Training," by Alfred I. Fiks, paper read at meeting of APA, 1965.

While constructing a programmed Vietnamese course, these research issues were investigated: Does prior listening exposure to phonology of a foreign language (FL) facilitate learning to speak the FL? How much variability in FL speaking test scores is attributable to heterogeneity of native listeners and to sequence effects? What factors attenuate the correlation between FL aptitude and achievement measures? Regarding the first question, no facilitation was demonstrated. To the second, listeners differed by as much as 25% from each other; test scoring sequence accounted for a 13% difference. Thirdly, r attenuation from $+ .79$ to $- .24$ is attributed to differential aptitude ranges.

"Development of a Short, Practical, Programmed Vietnamese Course," by Alfred I. Fiks, paper read at annual Army Human Factors Research and Development Conference, Fort Bragg, N.C., October 1965; in conference proceedings, *Report of the Eleventh Annual Army Human Factors Research and Development Conference*, October 1965.

This presentation reports the goals, approach, and results of developing a Vietnamese language course that could be taught without the presence of an instructor. The 50-lesson course that was developed was given to 19 Military Assistance Training Advisor students, all officers at the Special Warfare Center. These students did as well as or better than a traditionally trained group when both were tested on the Army Language Proficiency Test.

MOSAIC--Division No. 1 (System Operations)

(Ongoing Task)

Studies on Organization and Operation of Electronics Maintenance Units

"Ten New Concepts for Maintaining Electronic Systems," by Edgar L. Shriver and Robert C. Trexler, paper read at meeting of Army Maintainability Group, Washington, July 1965.

NCO-Division No. 3 (Recruit Training)
Training of Potential Noncommissioned Officers

(Ongoing Task) Subtask

Research on the Training of Noncommissioned Officers, A Summary Report of Pilot Studies, Technical Report 65-17, by Paul D. Hood, Richard P. Kern, and Morris Showel, December 1965. II

As part of a continuing research effort on junior NCO leadership preparation training for advanced basic trainees, exploratory studies were conducted on: (a) problems of selection and assessment of potential leaders among new recruits, (b) feasibility of course compression within the Light Weapons Infantryman MOS training to permit introduction of leadership preparation material, (c) development of an orientation program and motivational techniques for prospective leadership candidates, (d) definition of leadership skills fundamental to job performance at the junior NCO level and appropriate for training at the AIT level, and (e) exploration of methods for introducing junior NCO preparation within the Advanced Individual Training program. The studies yielded preliminary information relative to junior NCO leadership training on aptitude and sociometric ratings as promising selection factors, possible improvements in training methods, the need for development of criteria to assess technical proficiency and leadership skills, and the relation between training environment and effective leadership performance.

RIFLEMAN-Division No. 3 (Recruit Training)¹
Improvement of the Combat Proficiency of the Light Weapons Infantryman

(Ongoing Task)

Development of Improved Rifle Squad Tactical and Patrolling Programs for the Light Weapons Infantryman, Technical Report 65-16, by Joseph S. Ward and N.I. Fooks, December 1965. IV

AD-628 667

This report, on the final subtask of Task RIFLEMAN, presents and evaluates the improved Rifle Squad Tactical and Patrolling training programs developed to increase the combat proficiency of the Light Weapons Infantryman in Advanced Individual Training (MOS 111.0). The specific objective was to enable the trainee (a) to integrate previously learned skills and knowledges into effective combat behaviors, (b) to coordinate their use with those of fellow squad members, and (c) to execute tactical actions on orders of squad leaders. The method of research included (a) observation of current training and interviews with experienced instructors at Army training centers in order to identify LWI performance deficiencies, (b) derivation of training content from official Army literature and RIFLEMAN I LWI job descriptions, and (c) sequencing of training content into learning units consisting of exercises to form a complete combat action, progressing from emphasis on individual skills to integration of those skills in the squad. The resulting experimental program was administered to two companies of AIT trainees at Fort Ord, California, and was rated as more, or much more, effective than existing programs.

¹This Task was initiated at Division No. 4 (Infantry).

ROCOM--Division No. 4 (Infantry)

(Ongoing Task,

**Development of Methods and Techniques for Improving the Output
of ROTC**

**"The Development of a Basis for a Common Core Curriculum," by Theodore R. Powers,
paper read at meeting of APA, 1965.**

It was determined by a survey of General Military Science (GMS) course graduates that these junior officers are assigned many different types of duties, all showing a relatively low frequency of occurrence. The extensive range of assignments precluded the possibility of using any type of classical job analysis to identify knowledges and skills for a particular job. In partial fulfillment of the ultimate goal of determining training objectives for the GMS curriculum of the Army ROTC program, a method was developed to identify common knowledge and skill areas of various jobs that could be included under seven essential training dimensions. These common knowledge and skill areas were assigned a numerical rating, based on frequency of appearance in job analysis literature and also frequency of assignment for ROTC graduates. Those areas having a high rating, and determined to be appropriate for ROTC instruction, will be expanded and clarified as a means of developing training objectives for the ROTC program. This detailed set of duty-oriented training objectives could then be used as a basis for curriculum development.

SAMOFF--Division No. 5 (Air Defense)

**Systematic Analysis of Training Requirements and
Procedures for Surface-to-Air Missile Battery Officers**

A Model of Junior Officer Jobs for Use in Developing Task Inventories, Technical Report 65-10, III
by Harry L. Ammerman, November 1965.

AD-624 048

A job description procedure was developed for use by Army service schools in identifying all of the tasks performed by junior officers in a job assignment. This procedure was based on a model of officer job behavior, illustrating the nature and sequence of tasks performed to attain specific goals within each area of responsibility. The behavior model was itself developed from considerations of existing job descriptions, the nature of job information typically provided by interviews with officers, and an information-processing view of purposive behavior. Application of the description technique to one officer job yielded 816 tasks covering troop leadership and unit management, as well as tactical and technical functions. General statements of work were effectively broken into task-level statements of job activities. The technique should provide a practical means for describing most supervisory and command jobs characterized by a high proportion of variable, nonroutine, and covert activities.

Performance Aids for Junior Officers, Technical Report 65-11, by Harry L. Ammerman, III
December 1965.

AD-629 304

This study summarizes the comments and suggestions of 57 air defense battery officers concerning the types of managerial aids that would be useful for junior officer performance and learning. Based on discussions, a suggested format for a handbook was developed covering what the inexperienced unit officer needs most to know about operational and system checks of electronic equipment. Suggestions about the nature and content of desired aids should be applicable in many other junior officer managerial job situations.

VIGIL—Division No. 5 (Air Defense)

Subtask

**Methods and Techniques for Improving Performance
of Air Defense Missile Operator Personnel**

**"Radar Target Detection as a Function of Search Area and Viewing Distance," by V
A.D. Wright, E.W. Frederickson, and J.L. Claflin, *J. Appl. Psychol.*, vol. 49, no. 4,
August 1965.**

The detection task employed a 9 $\frac{1}{4}$ -inch Plan Position Indicator (PPI) and simulated targets. Thirty Army trainees served as subjects. Each subject performed the nine combinations of viewing distance—6, 12, and 18 inches—and of search area—whole scope, $\frac{1}{4}$ scope, and $1\frac{1}{16}$ -inch-diameter circle within the whole scope. A treatments \times treatments \times subjects analysis of variance indicated significant main and interaction effects: (a) As viewing distance increases, detection performance is degraded; (b) as search area increases, detection performance is degraded; (c) optimum viewing distance when searching the whole scope is approximately 12 inches, while optimum viewing distance for a small area ($1\frac{1}{16}$ -inch diameter) within a larger area is 6 inches or less.

**"Risk-Taking Set and Target Detection Performance," by Gary W. Evans, *J. Appl. Psychol.*,
vol. 49, no. 4, August 1965.**

An experiment tested the hypothesis that an observer's risk-taking set is related to his target detection performance on a radar display. Subjects were given an equal number of trials under neutral, risky, and cautious sets, where differential sets were produced by instructions. As hypothesized, when instructed to adopt a risky set, subjects made earlier detections of targets and had a higher false positive identification rate than the same subjects when instructed to adopt a cautious set. These findings support the contention that radar detection performance can be regarded as a decision task.

EXPLORATORY STUDY PUBLICATIONS

Exploratory Study 24—Division No. 2 (Armor)¹ Extended Operations

Summary of Literature Review on Extended Operations, Consulting Report by Dennis Cannon, Eugene Drucker, and Theodore Kessler, December 1964.

This report comprises a summary of a review of psychological literature pertaining to performance for extended periods of time. The material is organized into the following topics, as they relate to performance: sleep loss, temperature, nutrition, prolonged performance, drugs, stress, vibration, confinement, rest and personnel replacements, noise, radiation, and clothing. In addition, a brief summary of vigilance literature is included. The inconclusive nature of the reviewed research precludes supporting or denying the thesis that troops can be expected to remain effective for 48 hours or longer. Endurance limits may vary significantly from one task to another.

BASIC RESEARCH PUBLICATIONS

Basic Research 11—Division No. 5 (Air Defense) Programed Instruction

Measures of Ability and Programed Instruction Performance, Technical Report 65-12, by William H. Melching, December 1965.

AD-629 443

The results of several programed instruction studies recently accomplished by HumRRO Division No. 5 (Air Defense) at Fort Bliss were compared with regard to the relationship between measures of ability and measures of programed instruction performance. Although there were some exceptions, each ability measure tended to be substantially related to each measure of program-test performance. The contention that programed instruction eliminates achievement differences due to intellectual ability was not substantiated.

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¹Task ENDURE was initiated as a result of ES-24.

GENERAL PUBLICATIONS

HumRRO Publications

Short-Term Memory: An Annotated Bibliography, Technical Report 65-13, by Donald Reynolds and Richard D. Rosenblatt, HumRRO Division No. 1 (System Operations), December 1965. AD-627 394

The bibliography is divided into 12 areas as follows: (1) Information Theory; (2) Proactive and Retroactive Interference and Interpolated Activities; (3) Set, Subject-Strategies, and Coding Techniques; (4) Paired-Associate Studies; (5) Simultaneous Listening and Memory Span Studies; (6) Rate and Mode of Stimulus Presentation; (7) Rate and Order of Recall, and Serial and Sequential Tasks; (8) Methods, Theory, and Review Articles; (9) Meaningfulness, Degree of Learning, and Stimulus Organization; (10) Age Differences; (11) Comparisons of Short-Term Memory and Long-Term Memory; and (12) Perceptual Studies. There are 170 articles annotated in the bibliography and extensive cross-indexing to facilitate location of articles. Although the earliest study included is dated 1910, the majority of articles found herein were published in the period from 1959 through 1964. Use of multiple presentation of stimuli, even if the material was "immediately recalled," was labeled "learning" rather than "memory" and was therefore excluded.

Professional Presentations

"Dimensions of Simulation," by Meredith P. Crawford, Presidential Address for Division of Military Psychology, read at meeting of APA, 1965. (Dir. Off.)

"Psychological Research in Electronic Maintenance Training," by W.A. McClelland, paper read at Director of Electrical and Mechanical Engineers Study Period 1965, Arborfield, England, November 1965. (Dir. Off.)

In order to establish a form of reference for the British audience, HumRRO's role and mission in Army research and development, the U.S. Army personnel and maintenance systems, and a procedure for curricular control are briefly described. The bulk of the paper is devoted to selected examples of HumRRO R&D in electronics maintenance training. FORECAST, JOBTRAIN, MAINTRAIN, LIMIT, and REPAIR are cited.

Professional Publications

"Disaster at Little Big Horn," by Maj. Gen. E.B. Sebree [USA Ret.], *Infantry*, vol. 55, no. 4, July-August 1965. (Div. 3)

This paper presents an example of the lack of communications, tactics, unity, and leadership that became the disaster at Little Big Horn.

"A Study of Backward Chaining," by John A. Cox and Lynn M. Boren, *J. Educ. Psychol.*, vol. 56, no. 5, October 1965. (Div. 5)

Thirty men were trained to perform a 72-action procedure on Nike Hercules equipment. Three different training techniques were used, 10 men being trained with each technique. First, the actions were organized into seven operant spans and taught in reverse chronological order. Second, the same operant spans were taught in chronological order. Third, the complete procedure was taught without grouping actions into operant spans. Each subject was required to learn the procedure to one perfect performance. The amount of training time was collected as the score for each subject. Comparisons were made between the mean training times for the three techniques. No differences larger than chance were found.

"Verbal Mediation in Reverse Association: The Role of Temporal Factors," by Richard A. Kulp and John A. Robinson, *Psychonomic Sci.*, vol. 3, no. 10, November 1965. (Div. 2)

A three stage reverse mediation paradigm, A-B, B-C, C-A, and its control paradigm A-B, D-C, C-A, was studied at two test list anticipation intervals to determine the effects of temporal factors on reverse mediation. Forty-eight subjects learned three word lists consisting of low-frequency five-letter words by the paired-associate method. The results indicated that temporal factors play a significant role in facilitating reverse mediation.

RESEARCH BY-PRODUCTS

Human factors research and development directed toward the improvement of a specific Army activity often produces by-products, such as documents, materiel, manuals, textual materials used in the study, which may be suitable for operational use by the Army. Although direct utilization may be possible, such materials typically require adaptation for operational application. These by-products, which are devised as part of the research process, range from specific items such as training programs or job aids to more general materials having human factors relevance in training and other activities.

RIFLEMAN IV

Scrambled book for teaching defensive combat:

Fundamental Considerations for Defensive Combat, June 1965.

Scrambled book for teaching offensive combat:

Fundamental Considerations for Offensive Combat, June 1965.

Instructors' guide for training techniques in clearing buildings:

Combat in Built Up Areas: A Two-Hour Course in Clearing Buildings, by Joseph S. Ward, N.I. Fooks, William T. Hazelton, September 1965.